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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,691	11/11/2002	Sverker Alfredsson	07589.0060PC	2337

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EXAMINER

LEWIS, TISHA D

ART UNIT PAPER NUMBER

3681

DATE MAILED: 03/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/065,691

Applicant(s)

ALFREDSSON, SVERKER

Examiner

TISHA D. LEWIS

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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DETAILED ACTION

The following is a response to the amendment received on December 9, 2003 which has been entered.

Response to Amendment

Claims 1-21 are pending in the application. Claim 21 is newly added.

-Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Sweden on May 11, 2000. It is noted, however, that applicant has not filed a certified copy of the Swedish application as required by 35 U.S.C. 119(b).

-The objection to the specification has been withdrawn due to applicant reducing the number of words in the abstract.

-The objection to claims 1, 8 and 13 has been withdrawn due to applicant correcting errors as indicated in the office action mailed on January 22, 2003.

Response to Arguments

Applicant's arguments, see pages 12-14, filed December 9, 2003, with respect to the rejection(s) of claim(s) 1-20 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of applicant's argument that the novelty of the invention is the planetary gears having helical teeth providing an axial force for shift assisting during interaction of the gears. The Pigozzi reference uses helical teeth on the gears to retain the ring gear from shifting during synchronization of the input and output shaft and not to assist shifts during gear changes.

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10-13 and 15-20 are rejected under 35 U.S.C. 102(b) as being unpatentable by Larsson ('538). As to claims 10 and 11, Larsson discloses a range gearbox (3) of a planetary type adapted to assist shifting between at least two operating positions including:

a planetary gear (7) arrangement having three components including a sun wheel (9), a planet carrier (12) carrying a plurality of planet gears (10), and a ring gear (14) wherein one of the components is axially shiftable (14) between different axial positions for providing different gear ratios, and

the sun gear, planet carrier and ring gear interacting with each other via an interactive means (sleeve 18 forced by spring 34 to assist shifting of ring gear) to generate a shift assisting force during gear change.

As to claim 12, Larsson discloses the sun gear being secured to the input shaft and the planet carrier being mounted to the output shaft wherein both are anchored against axial movement and the ring gear is axially shiftable.

As to claim 13, Larsson discloses the shift assisting force being generated between a high range position and a low range position of the gearbox.

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As to claim 15, Larsson discloses the ring gear (14) connected non-rotatably to the coupling sleeve (18) arranged concentrically with the output shaft and serves as the ring gear carrier.

As to claim 16, Larsson discloses the coupling sleeve engaging in a first coupling position with a first coupling ring (21) fixed to the planet carrier and in a second coupling position with a second coupling ring (25) fixed to the housing.

As to claim 17, Larsson discloses the coupling rings having mutually facing synchronizing cones (23, 26) interacting with synchronizing rings (24, 27) engaging with the coupling sleeve.

As to claim 18, Larsson discloses the synchronizing rings (23, 26) pressable against the synchronizing cones (24, 27) by an annular spring (34) arranged between the cones and providing a first coupling position accommodated in a first groove (32) in sleeve (18) and another coupling position accommodated in a second groove (33) in sleeve (18).

As to claim 19, Larsson discloses the coupling sleeve having an annular flange (17) with external splines (16) engaging internal splines (15) on the ring gear (14) wherein the sleeve is axially fixed to the ring gear by a locking ring (19) accommodated in a groove in the ring gear.

As to claim 20, Larsson discloses an extension of teeth in the ring gear used to provide rotational locking of the ring gear to the sleeve.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9, 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larsson ('538) in view of Frost ('370). As to claims 1, 8, 9, 14 and 21, Larsson discloses a range gearbox (3) connected to the output of a basic gearbox including:

a planetary gear (7), enclosed in a housing (3), with a sun wheel (9) arranged (rigid, no axial movement) on an input shaft (5) and engaged with planet wheels (10) which are carried by a planet carrier (12) connected (rigid, no axial movement) to an output shaft (8) and engageable with an axially displaceable ring gear (14) which has a first position for being locked to the housing and a second position for connecting to the output shaft via the planet carrier (column 3, lines 28-48) wherein interacting teeth of the planetary gear engage to provide torque between the input and output shafts during high and low range positions, but the teeth are not angled (helical) to provide axial force to assist shifting between the first and second positions.

Frost discloses a reversing mechanism having a planetary gear set (42) enclosed in a housing (14) with a sun wheel (44, 50) having a rotation in the clockwise direction via the input shaft (24) with teeth being directed to the right and a planet carrier (54) carrying a plurality of planet gears (46) wherein the sun wheel (44) is axially

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displaceable for providing a first position and a second position by force generated through helical teeth (114, 116) between the sun gear and pinion gear interacting to cause axial force to shift the sun gear during a range change (forward, neutral or reverse) (column 3, lines 1-25).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the gear teeth of Larsson with angled or helical teeth in view of Frost to reduce high level noise generated between the interacting teeth of the planetary gear during operation.

As to claim 2, Larsson discloses the ring gear (14) connected non-rotatably to a coupling sleeve (18) arranged concentrically with the output shaft and serves as the ring gear carrier.

As to claim 3, Larsson discloses the coupling sleeve engaging in a first coupling position with a first coupling ring (21) fixed to the planet carrier and in a second coupling position with a second coupling ring (25) fixed to the housing.

As to claim 4, Larsson discloses the coupling rings having mutually facing synchronizing cones (23, 26) interacting with synchronizing rings (24, 27) engaging with the coupling sleeve.

As to claim 5, Larsson discloses the synchronizing rings (23, 26) pressable against the synchronizing cones (24, 27) by an annular spring (34) arranged between the cones and providing a first coupling position accommodated in a first groove (32) in sleeve (18) and another coupling position accommodated in a second groove (33) in sleeve (18).

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As to claim 6, Larsson discloses the coupling sleeve having an annular flange (17) with external splines (16) engaging internal splines (15) on the ring gear (14) wherein the sleeve is axially fixed to the ring gear by a locking ring (19) accommodated in a groove in the ring gear.

As to claim 7, Larsson discloses an extension of teeth in the ring gear used to provide rotational locking of the ring gear to the sleeve.

FACSIMILE TRANSMISSION

Submission of your response by facsimile transmission is encouraged. Group 3600's facsimile number is **(703) 872-9326 before final and 703-872-9327 after final**. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent's term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group's hands and will eliminate Post Office processing and delivery time as well as the PTO's mail room processing and delivery time. For a complete list of correspondence not permitted by facsimile transmission, see MPEP 502.01. In general, most responses and/or amendments not requiring a fee, as well as those requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission. Responses requiring a fee which applicant is paying by check **should not be** submitting by facsimile transmission separately from the check.

Responses submitted by facsimile transmission should include a Certificate of Transmission (MPEP 512). The following is an example of the format the certification might take:

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(Signature)

If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and MPEP 502.02). Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only

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cause further unnecessary delays in the processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Holdeman ('960) is cited as having a range gearbox using helical teeth for the planetary gears.

-Antonov ('906) is cited as a gearbox wherein helical teeth are used to assist shifting between different gear ratios.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TISHA D. LEWIS whose telephone number is 703-305-0921. The examiner can normally be reached on M-Thur 8 AM TO 3 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHARLES A. MARMOR can be reached on 703-308-0830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tdl
March 10, 2004

[Signature]
Primary Examiner
AU 3681 3/10/04